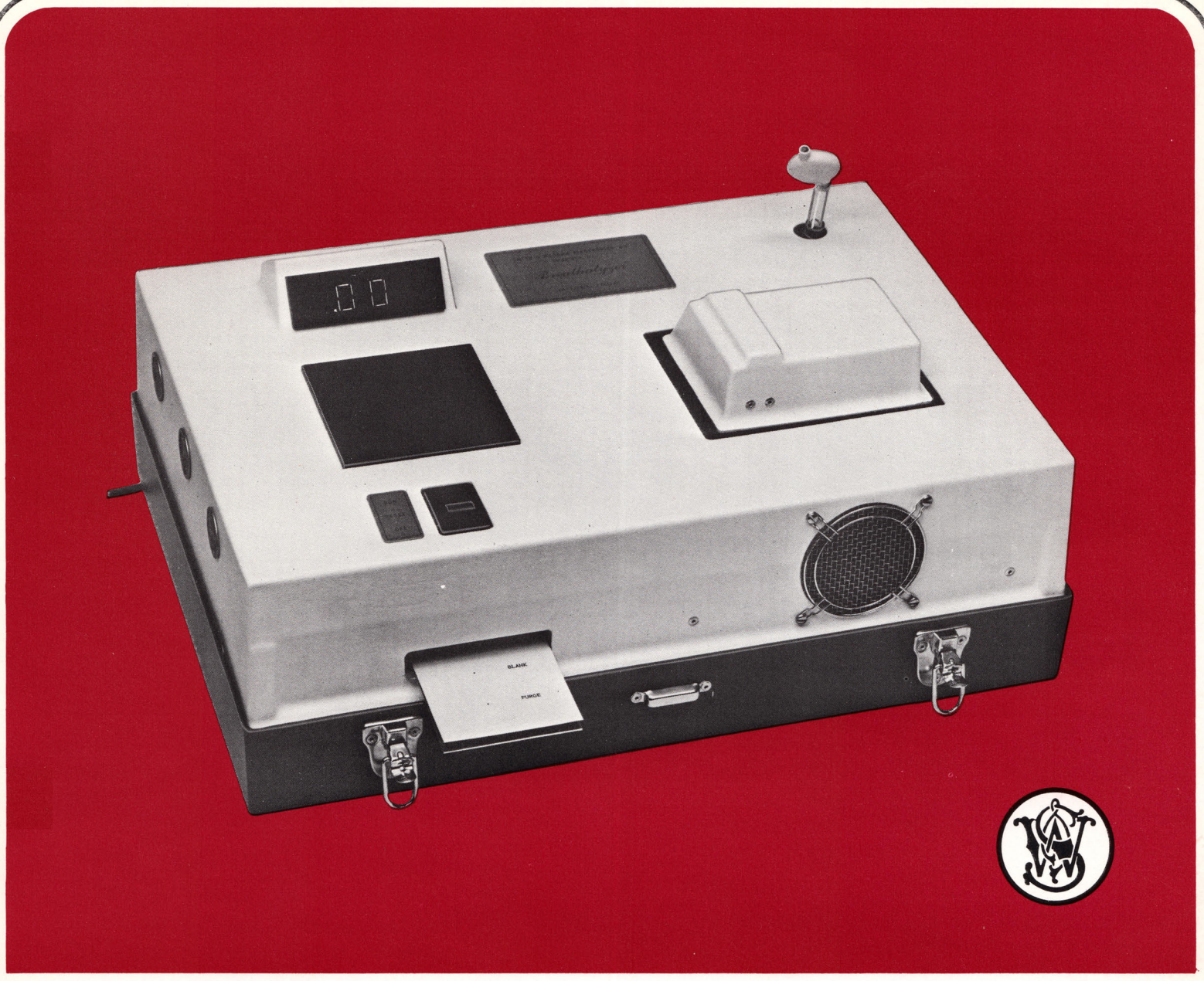


breathalyzer® 1000

Computerized analysis of blood alcohol by breath tests

The BREATHALYZER 1000 is a quantitative breath alcohol instrument utilizing the well established BREATHALYZER METHOD. Every effort has been given to retain all component philosophy with the method and at the same time produce an instrument with digital display and multiple copy print-out.

Computerized operational programming of the BREATHALYZER METHOD and solid state electronic circuitry has resulted in the virtually "fail-safe" operational reliability reflected in the BREATHALYZER 1000.

The operation of the BREATHALYZER 1000 is under the control of a self-contained Program Counter which acts as the "brain" of the instrument. After the unit has undergone the complete purging phase, an indicator lights and the suspect's breath sample may be introduced. The Program Counter will then electronically monitor each subsequent phase of analysis.

The BREATHALYZER 1000 is insensitive to line voltage variation or temperature, insuring an accurate test result under all operating conditions.

The BREATHALYZER 1000 has set the standard by which all other blood alcohol analyzers will be compared.

Smith & Wesson Electronics Co.

all programs of breath analysis are electronically monitored by the breathalyzer 1000

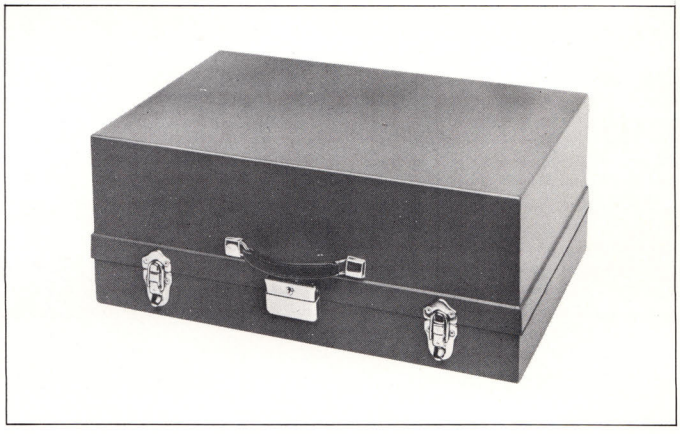
Reset Mode Breath alcohol analysis begins by advancing the Mode Selector Switch to the Reset position. The "Wait" indicator lamp will light and remain lighted until the instrument has attained proper operating temperature. During the "Wait" period or prior to each analysis, the test ampoule and print out ticket are inserted into the instrument by the operator.

Run Mode By advancing the Selector Switch to the Run position, the computerized programming of the BREATHALYZER 1000 will be initiated. From this point, the instrument is under control of the self-contained Program Counter. Indicator lamps will light, alerting the operator as to which cycle is in progress.

The result of each test is clearly displayed on the panel by illuminated digits. In addition, the instrument will print the results on a multiple copy ticket which may be retained as a permanent record of the test.

Purge Cycle An accurate analysis requires complete absence of alcohol residue which may be present from previous testing. The Purge Program will eliminate any residue, thus insuring an exact analysis result.

Blank Cycle The BREATHALYZER 1000 will test itself to determine if all alcohol residue has in fact been removed. The Digital Display and print out will reveal the result of the Blank test. In the unlikely event that a reading above zero be displayed, the operator need only reinitiate the Purge Cycle.



Sample Test Cycle The suspect's breath sample may be introduced following the illumination of the Blow Sample indicator lamps. The operator simply instructs the suspect to blow into the sanitized mouth piece until the Blow lamp goes out. Should the suspect's breath sample be insufficient for accurate analysis, the Blow indicator will remain lighted and the BREATHALYZER 1000 will not proceed with the test. This indicates that a new sample must be introduced for attainment of a true analysis.

Physical Specifications

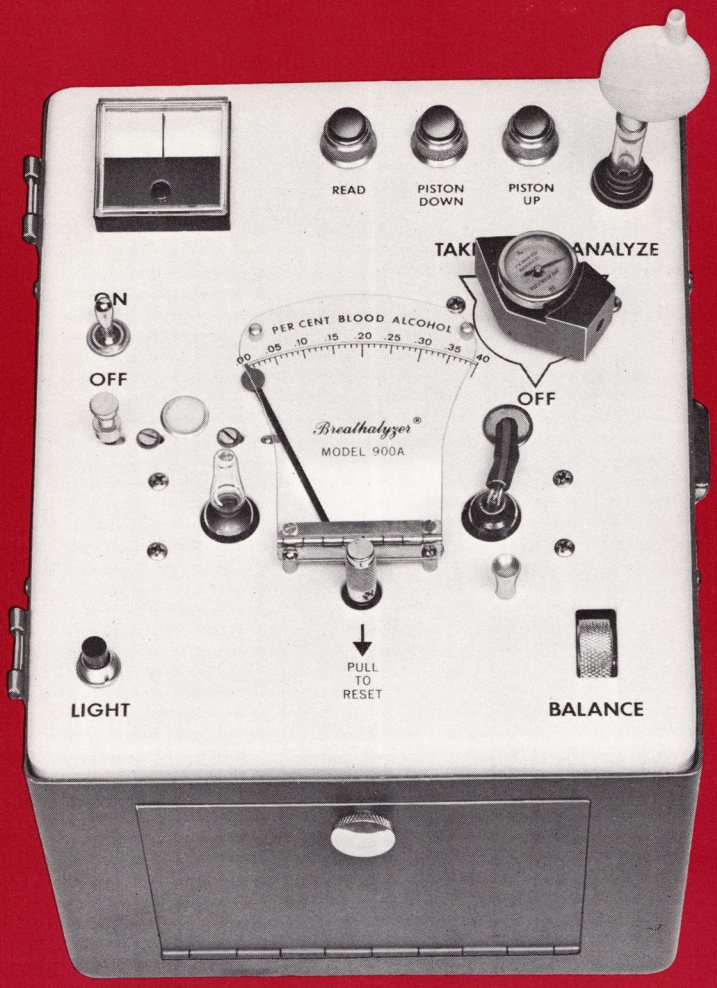
Height with cover—8¾ inches
Width—20¾ inches
Depth—15½ inches
Line current—2 amperes
Voltage—90 to 130 volts at 60 cycles per second
Weight—42 pounds

Address of Nearest Representative

Smith & Wesson Electronics Co.
A BANGOR PUNTA COMPANY
EATONTOWN, NEW JERSEY 07724
Telephone 201-542-7700

Printed in U.S.A.

Bulletin No. B002-973



breathalyzer® 900 A

Accurately analyze blood alcohol by a simple breath test

The Smith & Wesson Electronics BREATHALYZER 900 A is a portable instrument used for determining the alcohol content of the blood by a simple breath test. Accuracy is attained by the constant relationship which exists between the concentration of alcohol in the breath and that in the blood. The results of a BREATHALYZER test are indicated on a scale calibrated in terms of percent alcohol in the blood. The BREATHALYZER is also equipped to print a permanent record of the test result if desired.

BREATHALYZERS are now in use throughout the world. Their accuracy and practicality are widely recognized. The BREATHALYZER 900 A represents continuous research and development by Smith & Wesson Electronics, resulting in simplified operation and construction improvement.

The BREATHALYZER 900 A features an Electronic Null Meter and a fully transistorized timer. The Electronic Null Meter is highly sensitive and far more rugged than a standard galvanometer. The Timer measures the operation of the BREATHALYZER and activates a "Read" light after the proper time has elapsed. The Timer is inter-locked so that the unit cannot accidently be read prematurely.

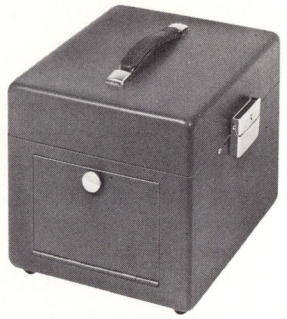
Smith & Wesson Electronics Co.

more than 7000 BREATHALYZERS are now in use

The BREATHALYZER not only aids in determining if a person is under the influence of alcohol, but also assists in absolving a person who appears intoxicated but may actually be suffering from epilepsy, heart attack, insulin overdose or other pathological conditions.

The BREATHALYZER is noted for:

- ☐ **Simple Operation** —Six easy steps
- ☐ **Easy Maintenance** —Clearly explained in manual
- ☐ **High Stability** —Instrument is independent of variable conditions such as line voltage, bulb intensity or chemical strength.
- ☐ **Stable Solutions** —Solutions are pre-measured in hermetically sealed ampoules having a useful life for many years.
- ☐ **Low Cost Per Test** —Inexpensive disposables are used consisting of certified BREATHALYZER ampoule, sanitary mouth piece and chemically clean bubbler tube.
- ☐ **Simple To Explain** —Principle and design which is accepted in the court room.



900 A with portable carrying cover

Breathalyzer Operation

The first phase relates to the taking of the breath sample. The suspect blows into the mouth piece when the control knob is in the *Take* position. The breath sample is delivered through tubing to the bottom of a chamber consisting of a vertical cylinder containing a piston. The pressure of the breath lifts the finely machined piston until vents at the top of the cylinder are uncovered, thus allowing the first portion of breath to escape. When the suspect stops blowing, the piston settles to a pre-determined position closing the vents and is held there by a magnet. By this means, a definite volume of the last portion of expired breath is trapped in the cylinder.

In the second phase of the analysis, the control knob is turned to the *Analyze position.* This releases the piston, the weight of which forces the breath sample through tubing and a glass bubbler into a glass ampoule containing 3 ml of 0.025% potassium dichromate in 50% of volume sulphuric acid. In this solution, the alcohol in the breath sample is quantitatively oxidized to acetic acid with a corresponding reduction of potassium dichromate. This reduction results in a change in the yellow color of the ampoule solution.

The third phase consists of measuring the decrease in the yellow color potassium dichromate that accompanies the reaction. This is accomplished by the use of a photometer. The arrangement of light source, test and reference ampoules, blue filters and photovoltaic cells permits measurement of the reduction in the potassium dichromate being used.

The amounts of blue light transmitted through the *Test* and *Standard* ampoules are compared by two self-generating photovoltaic cells connected in opposition so that when receiving the same amount of light, their output currents cancel out each other. The photometer light source is positioned by means of the light carriage adjustment until the *Null* meter indicates a photometric balance. If the optical density of the *Test* ampoule has been decreased as a result of the reaction with the alcohol in the breath sample, the circuit will no longer be balanced. The light source is moved laterally to a new position to restore the photometric balance. The distance the light has been moved is indicated by a pointer on the panel. The dial above this pointer is calibrated in percent blood alcohol.

Address of Nearest Representative

Smith & Wesson Electronics Co.

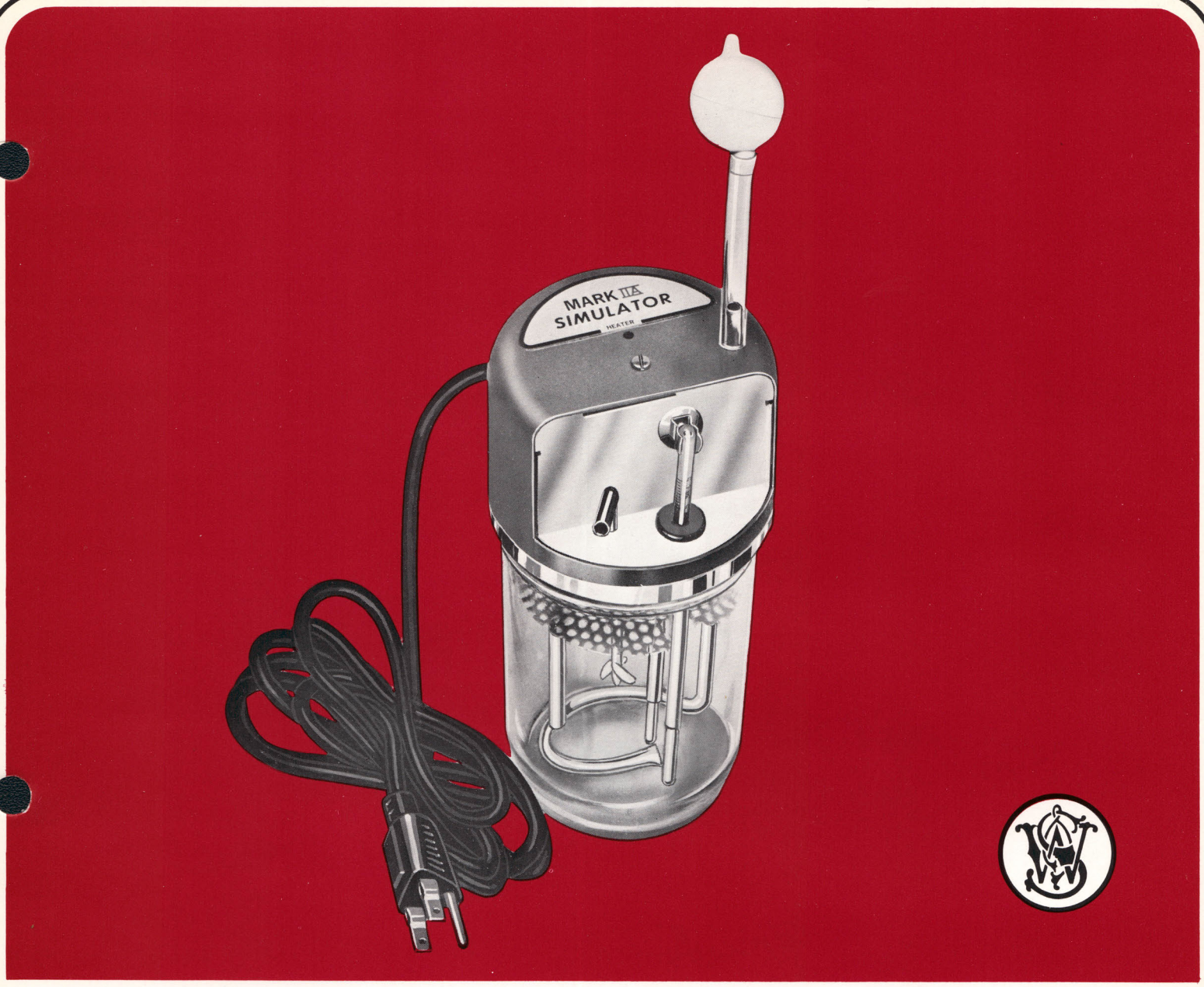
A BANGOR PUNTA COMPANY

EATONTOWN, NEW JERSEY 07724

Telephone 201-542-7700

Printed in U.S.A.

Bulletin No. B001-0473



mark IIA ALCOHOL BREATH SIMULATOR

Maintain unquestionable BREATHALYZER calibration

The MARK II Alcohol Breath Simulator is an electrically operated alcohol reference standard. Its purpose is to enable positive calibration checks of BREATHALYZER equipment.

A calibration check may be accomplished by introducing to the BREATHALYZER a breath sample containing a known percentage of alcohol. Proper calibration will result in a BREATHALYZER reading correspondent to the known alcohol percentage of the introduced breath sample. In the event that the reading does not correspond, calibration adjustment is needed.

The MARK II simulates a breath sample which contains a known percentage of alcohol. This simulated sample is the alcohol reference standard against which calibration settings can be checked.

The simulated sample is derived from an alcohol solution prepared by the Breathalyzer operator. The solution consists of specified amounts of pure alcohol and distilled water. The Simulator converts the prepared solution to a vapor resembling a human breath sample in density and temperature. Because the simulated sample contains a known amount of pure alcohol, the percentage of alcohol is thereby known.

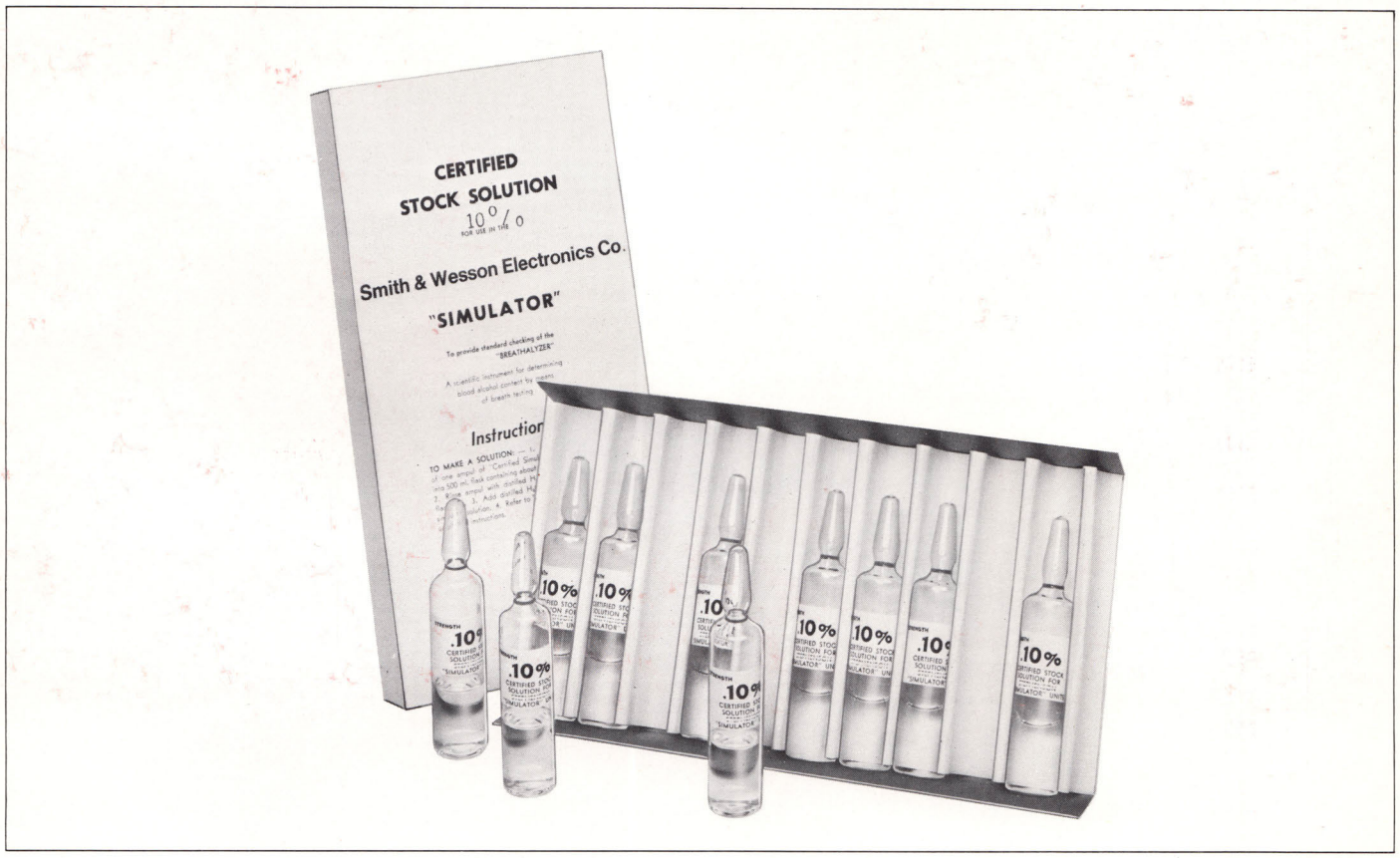
Smith & Wesson Electronics Co.

Having connected the MARK II Simulator to the BREATHALYZER unit, the operator must blow into the Simulator breath tube. This forces the known breath sample thru the simulator alcohol mixture and into the BREATHALYZER The BREATHALYZER will read the simulated sample as it would an actual breath sample. Proper calibration will cause this reading to match the known percentage of alcohol within the simulated sample thus confirming positive calibration.

Specifications

Height—8½ inches
Diameter—4½ inches
Weight—3 pounds
Operating voltage—115 volts, A.C.
Power draw—70 watts
Solution volume—500 Ml.

certified stock solutions pre-mixed for your convenience



Preparation of the MARK II Simulator solution first requires making up a stock solution. That is, a solution containing a known volume of alcohol. The stock solution can be prepared by the BREATHALYZER operator by mixing distilled water with a specified amount of pure alcohol.

For your convenience, Smith & Wesson Electronics makes available Certified Stock Solution for use in the MARK II Simulator. The Stock Solution is pre-mixed and packaged in easily handled glass ampoules; 10 ampoules to a box.

The procedure simply calls for combining one ampoule of Certified Stock Solution with enough distilled water to total 500 millileters of liquid. This mixture then constitutes the MARK II Simulator solution.

Because various states have set minimum intoxication levels differently, the Certified Stock Solution is offered in two strengths: .10% and .15% alcohol content. To obtain a simulated breath sample resulting in a BREATHALYZER reading of .10%, order .10% stock solution. A .15% BREATHALYZER reading requires a .15% Stock Solution.

Address of Nearest Representative

Smith & Wesson Electronics Co.
A BANGOR PUNTA COMPANY
EATONTOWN, NEW JERSEY 07724
Telephone 201-542-7700

Printed in U.S.A.

Bulletin No. B003-973

breathalyzer® collection and transfer units

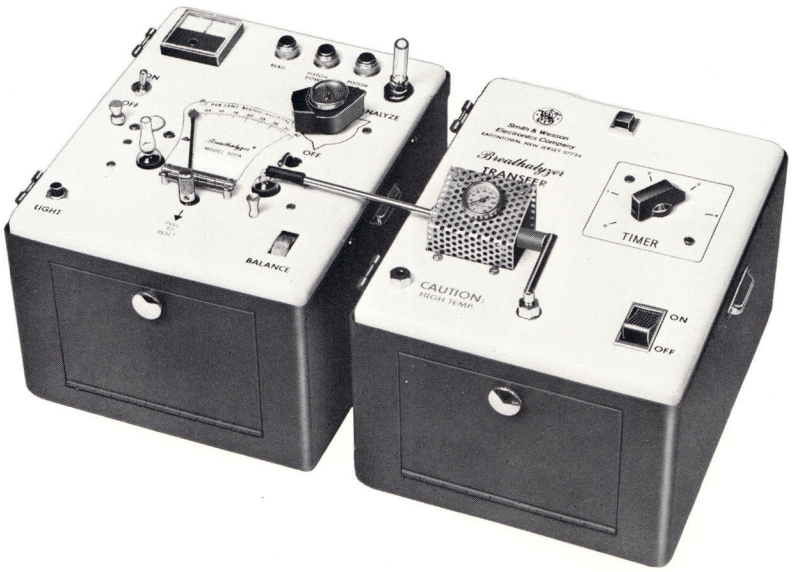
Expand the capability of your BREATHALYZER.

Now you can take breath samples in the field for later analysis in the BREATHALYZER. The Field Collection System consists of two parts, the Collection Unit and the Transfer Unit.

The Collection Unit takes a breath sample in the same manner as a BREATHALYZER does, using a piston and cylinder assembly of known volume. The breath sample is passed through a Storage Tube. Alcohol present in the breath sample is absorbed by crystals in the Storage Tube. The Storage Tube is then sealed in a glass cylinder and retained for later BREATHALYZER analysis.

When analysis is desired the Transfer Unit is utilized. The Transfer Unit is connected to a standard BREATHALYZER. The Storage Tube to be analyzed is inserted in the oven chamber of the Transfer Unit. The oven bakes out the alcohol previously stored in the Storage Tube and sends the alcohol vapors to the BREATHALYZER for analysis.

Smith & Wesson Electronics Co.



BREATHALYZER CONNECTED TO TRANSFER UNIT

Collection Unit

The small COLLECTION Unit, (3¼ x 4¼ x 7½), contains a standard temperature controlled BREATHALYZER piston and cylinder assembly. This assembly is used to capture a standard breath sample.

The Breath Sample is passed through the STORAGE TUBE, as opposed to being passed into the Test Ampoule, as in a BREATHALYZER. Two lights on the COLLECTION Unit show the position of the piston within the Sample Chamber just as on a BREATHALYZER. The TRANSFER Unit operates on 12 Volts supplied by the vehicle in which it is located. For ease of connection, the Unit comes with a Power Cord equipped with a cigarette lighter plug.

Transfer Unit

The TRANSFER Unit is basically a high temperature oven used to "bake out" the alcohol stored in the STORAGE TUBE. The Oven Chamber that holds the STORAGE TUBE is instantly removable for ease of cleaning.

The TRANSFER Unit also contains an Air Pump and a Timer. The Air Pump is used to supply carrier air to transport the alcohol vapor to the BREATHALYZER. The Automatic Timer insures that the duration of the "baking" process is adequate. The TRANSFER Unit operates on standard line voltage.

Address of Nearest Representative

Smith & Wesson Electronics Co.

A BANGOR PUNTA COMPANY

EATONTOWN, NEW JERSEY 07724

Telephone 201-542-7700

Printed in U.S.A.

Bulletin No. B003-272

Smith & Wesson

Breath Testing Equipment & Accessories

DISTRIBUTOR PRICE LIST

EFFECTIVE AUGUST 30, 1974

BREATHALYZER® EQUIPMENT	PART NUMBER	DISTRIBUTOR PRICES		SUGGESTED LIST PRICE
		1-9	10/UP	
BREATHALYZER Model 1000 Includes: AC Power Cord Ampoule Gauge 1 Pad Operation Check List 1 Pad Test Record Tickets Instruction Manual	003-1000-00	$1495.00	$1465.00	$1,995.00
BREATHALYZER Model 1000—Less Print Out. Includes: AC Power Gauge Ampoule Gauge 1 Pad Operation Check List Instruction Manual	003-0311-00	1195.00	1,170.00	1595.00
BREATHALYZER Model 900A Includes: AC Power Cord Ampoule Gauge Flushing Bulb 1 Pad Operation Check List 1 Pad Test Record Tickets Ins. & Main. Manual	003-0117-00	655.00	642.00	875.00
SIMULATOR Model Mark II	003-6098-00	100.00	98.00	133.00
SIMULATOR Model Mark IIA	003-0279-00	100.00	98.00	133.00
EQUILIBRATOR	003-0007-00	26.25		35.00
COLLECTION UNIT	003-0023-00	150.00		200.00
TRANSFER UNIT	003-0026-00	265.00		375.00

POLICY & TERMS

1. Quantity Orders Will be Filled by One Shipment to One Destination.
2. All Prices are F. O. B. Eatontown, New Jersey.
3. All Prices are Subject to Change without Notice.
4. Terms of Sale — 5% Discount, 10 Days, Net 30 Days.

Smith & Wesson Electronics Co.

A Bangor Punta Company

Meridian Road
Eatontown, New Jersey 07724

03-0874-20

PRINTED IN U.S.A.

BREATHALYZER® EXPENDABLES	PART NUMBER	DISTRIBUTOR PRICE	SUGGESTED LIST PRICE
CERTIFIED TEST KITS Includes: 1 Ampoule 1 Bubbler 1 Mouthpiece Record Pad Operation Pad	003-0006-00	Per Kit	Per Kit
Order in Units of:			
25 (1 Box)		$1.04	$1.20
200 (1 Carton)		.77	.93
1,200 (1 Case)		.63	.76
6,000 (5 Cases)		.59	.71
12,000 (10 Cases)		.57	.68
24,000 (20 Cases)		.55	.65
RECORD TICKETS FOR BREATHALYZER MODEL 1000	X30-0011-00	Per Ticket	Per Ticket
Order in Units of:			
200		$0.08	$0.12
1,200		.06	.10
6,000		.04	.07
12,000		.03	.05
24,000		.025	.04
CERTIFIED SIMULATOR AMPOULES		Per Box	Per Box
For 0.10% Solution — 10 (1 Box)	705-0003-00	$8.20	$13.60
For 0.15% Solution — 10 (1 Box)	705-0004-00	8.20	13.60
STORAGE KITS FOR REMOTE COLLECTION UNIT Includes: 1 Storage Tube 1 Mouthpiece		Per Kit	Per Kit
Order in Units of:			
25 (1 Box)		$1.10	$ 1.35
200 (1 Carton)		.87	1.10

BREATHALYZER® TRAINING AIDS	PART NUMBER	DISTRIBUTOR PRICE	SUGGESTED LIST PRICE
TRAINING AMPOULES	705-0001-00	Per Each	Per Each
Supplied in Quantities of:			
200		$0.33	$0.38
1,200		.27	.33
4,800		.25	.30
12,000		.22	.27
BUBBLERS AND MOUTHPIECES (Bagged Together)	725-3273-00 760-3270-00		
Supplied in Quantities of:			
200		$0.33	$0.44
1,200		.29	.38
MOUTHPIECES (Individually Bagged)	760-3270-00		
Supplied in Quantities of:			
200		$0.16	$0.22
1,200		.13	.16
CLASSROOM CHARTS			
BREATHALYZER SCHEMATIC	003-0003-00	$2.50	$3.50
BREATHALYZER PANEL CHART	003-9724-00	3.00	4.00
DRINKING DRIVER LIMITS	003-9723-00	4.00	5.50